

The Role of Artificial Intelligence in Supply Chain Optimization



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Artificial intelligence (AI) is transforming supply chain management by enhancing transportation, inventory control, and demand forecasting. Unlike traditional methods, AI leverages machine learning and real-time data analytics to make faster and more accurate decisions. It draws insights from various sources such as weather reports, social media trends, and sales data to predict customer demand effectively. Companies like Amazon and Walmart use AI to reduce excess inventory and ensure product availability. In inventory management, AI automates restocking, forecasts reorder points, and detects anomalies, helping retailers like Zara, and also aligns store inventory with customer preferences and reduces markdowns.

AI also boosts logistics efficiency by optimizing delivery routes considering traffic and weather, enabling real-time tracking, and supporting predictive maintenance of transport vehicles. Companies such as FedEx and DHL use AI-driven platforms to cut costs and improve delivery speed through automation and predictive analytics. However, AI adoption faces challenges like high implementation costs, data quality issues, and the need for employee upskilling. Despite these hurdles, AI is becoming crucial as supply chains grow more complex. Businesses that integrate AI gain agility, efficiency, and resilience. The key advantages in today's dynamic market are positioning themselves to meet customer expectations and handle disruptions more effectively.

Biography:

Dr.G.S. Vijaya, BE (E& EE), MBA, PHD is currently working as Professor and Area Head (Decision Science) Faculty of Management studies, CMS Business School, JAIN (Deemed-to-be University). With a career spanning over 28 years, she has held significant roles in both academia and industry, working at various prestigious Indian universities and Al Yamamah University in Saudi Arabia. She is a Life Member of the Indian Society for Technical Education, the International Association of Engineers in Singapore, and the Quality Circle Forum of India. Her commitment to advancing education and research is evident through her mentorship of seven research scholars who have earned their PhDs under her guidance and she has contributed to the intellectual property domain with three patents. She has published more than fifty papers and thirteen book chapters.

She has presented research papers at prominent institutions and conferences. Her work has been showcased at Indian Institutes of Management (IIMB and IIMK), the Steel Authority of India Limited (SAIL), and international forums such as the International Institute of Social and Economic Sciences (IISES) in Venice -Italy, Eurasian conferences at Valencia-Spain, London-UK, Vienna- Austria and Paris - France. Furthermore, her expertise has been recognized in technical sessions and as a speaker at few Indian and Eurasian conferences.